Engineering Competency
Development Program
(Formerly known as Logbook Training Scheme)

ECD Engagement Session – Route to Professional Engineer

16 January 2021

Welcome to the ECD 2021, 1st Webinar!

Session will go on for 2 hours from 9am to 11am.

1 hr 30 mins allocated for Speakers.

30 mins allocated for question and answer.

Questions can be typed on Question menu at the Control Panel.

Questions shall be discussed at the end of the session.

Feedback Email: ecd@iem.org.my

The Speakers

Ir. Mohd Azha Abu Samah, MIEM
Chairman
Engineering Competency Development

Ir. Juares Rizal bin Abdul Hamid , FIEM
Committee Member,
Engineering Competency Development

Talk Objectives

- To introduce Engineering Competency Development to newcomers
- To provide a general guidance on how to be a Professional Engineer
- To provide information on how ECD can help IEM Graduate Members to be a Professional Engineer

Talk Contents

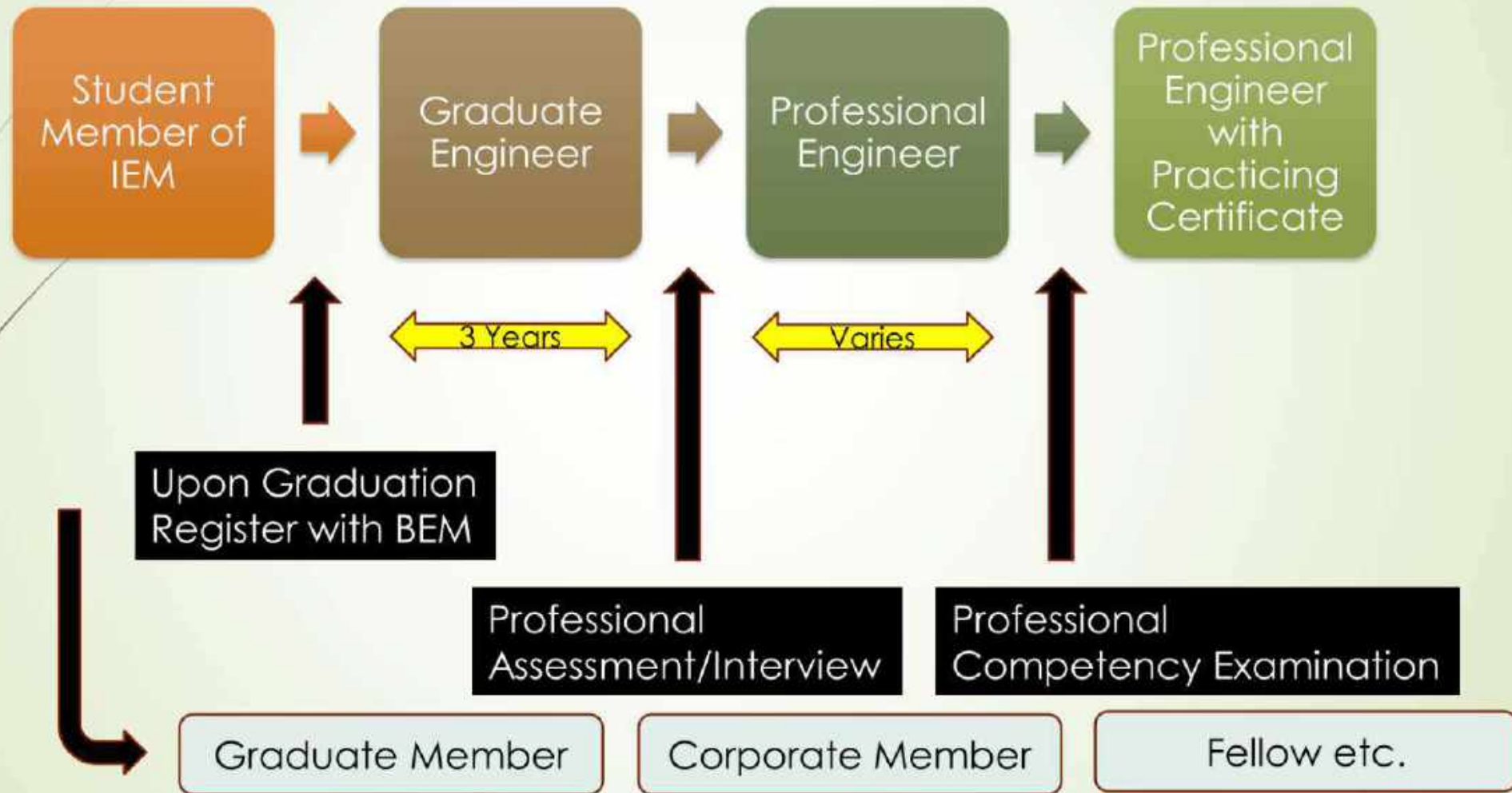| Introduction	The ECD Program	The Sub-Committee	The Mentor

The Mentee	The Logbook	Way Forward

Introduction – The Route You Choose

Where are you heading to?

Student Member of IEM → Graduate Engineer → Professional Engineer → Professional Engineer with Practicing Certificate

3 Years

Varies

Upon Graduation Register with BEM

Professional Assessment/Interview

Professional Competency Examination

Graduate Member

Corporate Member

Fellow etc.

ROUTE TO BECOME A PROFESSIONAL ENGINEER

| Route A (Professional Assessment Examination)	or	Route B (Route for a Professional Engineer from an overseas Regulatory Body)	or	Route C (Corporate Member of IEM)

I. has obtained 3 years practical experience as specified in Regulation 22(1) which shall include the following:
 	
  a. at least two years of general training that will provide a sound basis for professional development; and
 	
  b. at least one year of professional career development and training providing wide exposure to the various managerial and technical expertise in engineering practice where;
	or	I. Applicant shall pass Code of Conduct Assessment based on Registration of Engineers Act 1967 (Revised 2015);
		
		II. Applicant shall submit to BEM a certified latest Professional Engineer Certificate issued by a Regulatory Body of other country;
		
		III. The professional engineers status shall be check that it is equivalent to BEM's professional engineer qualifications eligibility;
		
		IV. The applicant is not entitle to be registered as a Professional Engineer if at any time prior to his
			or	I. A Corporate Member of the Institution of Engineers Malaysia (IEM)
				
				II. has complied with the requirements as determined by the Board as follows:
				
				  a. has obtained 3 years practical experience as specified in Regulation 22(1) which shall include the following:
				
				    i. at least two years of general training that will provide a sound basis for professional development; and
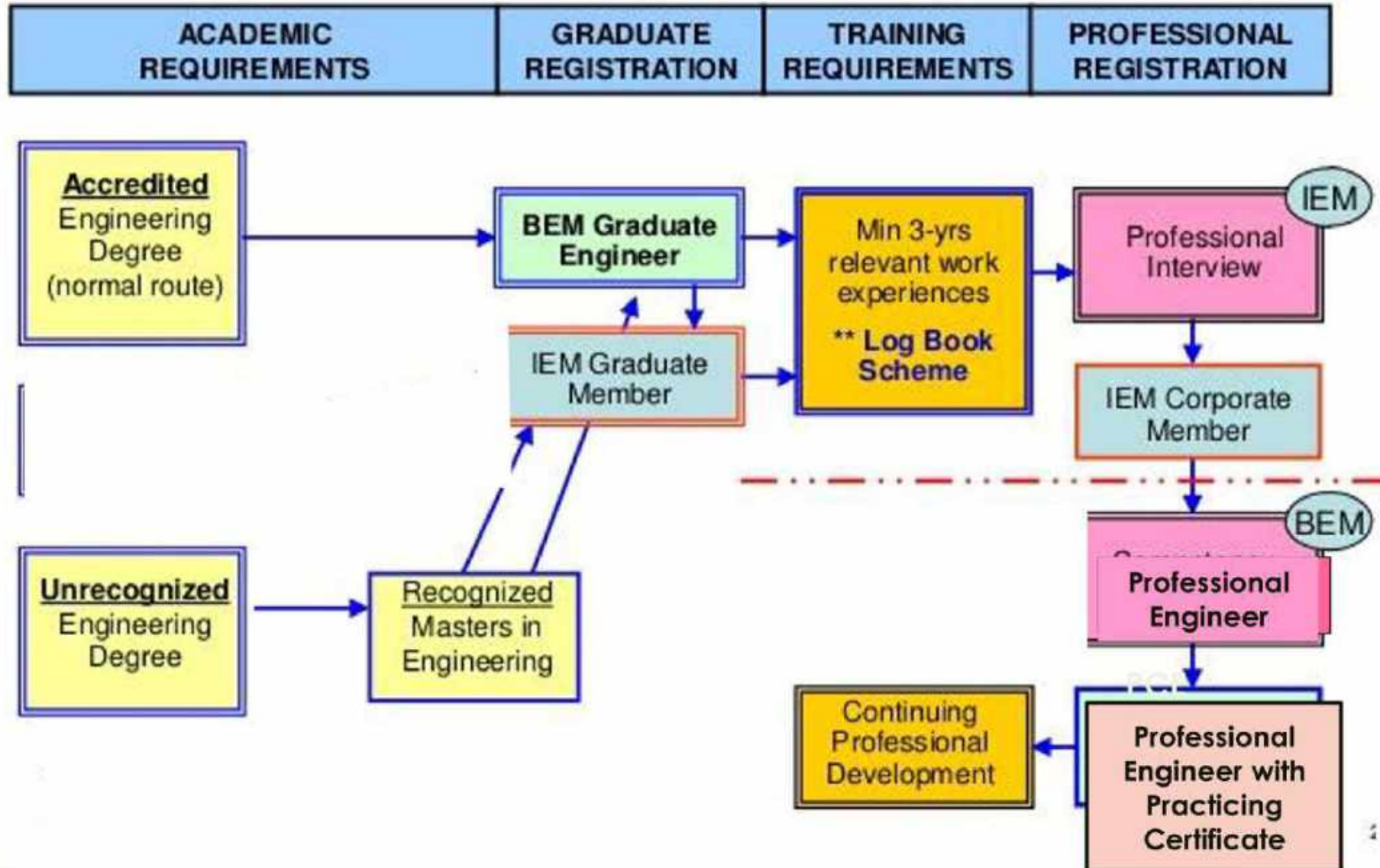
The ECD Program

The Program
The Big Picture

The Logbook

ECD Program

The Mentee

The Mentor
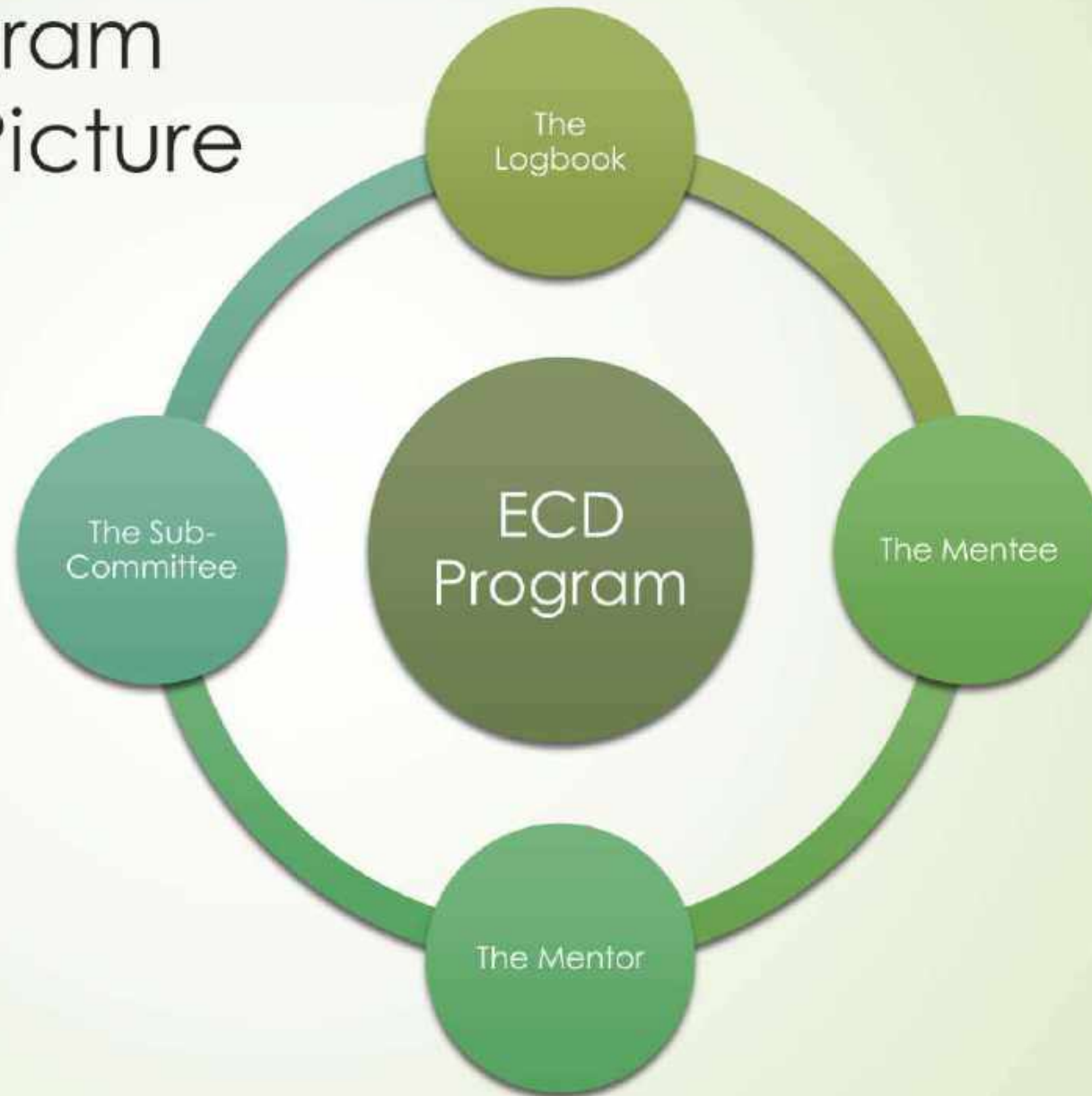
The Sub-Committee

The Big Picture 2

Mentee Register

- Assigned a Mentor

Quarterly Meeting

- Report reviewed by Mentor
- If practicable: Visit to mentee's workplace at least once during the mentorship

Annual Report Submission

- 3 years
- Reviewed by Sub – committee every year

Professional Interview

- Technical Report
- Portfolio of Evidence

Engineering Competency Development (ECD)

Home / Membership / Engineering Competency Development (ECD)

The Engineering Competency Development (ECD) program implemer
Malaysia (IEM) aims to provide guided and proper training to IEI
profession of engineering, to facilitate conformance of such tra
concerning admission of Corporate Members. A Graduate Engin
competency development program accordingly while being monitore
Mentor to facilitate his/her preparation for Professional Interview (PI)

The ECD program requires a training and experience exposure dura
(3) continuous years; this requirement complies to the Professional
that a Candidate shall have at least THREE (3) years (after gradua
degree) of approved experience in planning, design, execution or
and relevant for the profession of an engineer. Progress will be
and/or mentored at least once every quarterly by both the Mentee
Please refer to the list below for the necessary forms and format of l

Participation in the ECD program is not obligatory. However,
recommended particularly for Graduate Engineers who are starting
job and/or other modes of training experience but under a supervisio
a Professional Engineer(s) who are not from the same engineering di

Graduate Engineers interested in participating in the progam may
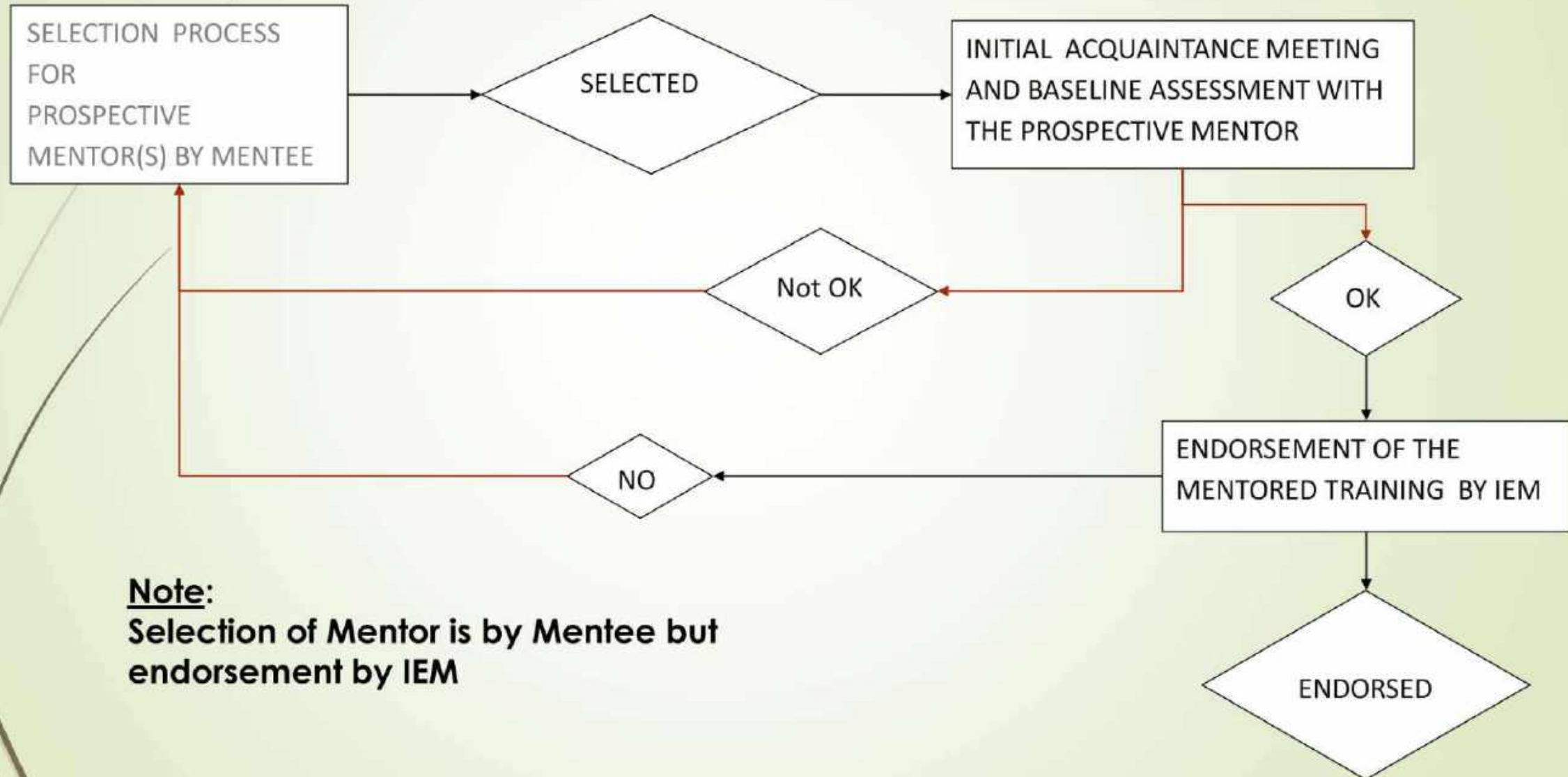Halimah at 03-7968 4012 for further information.

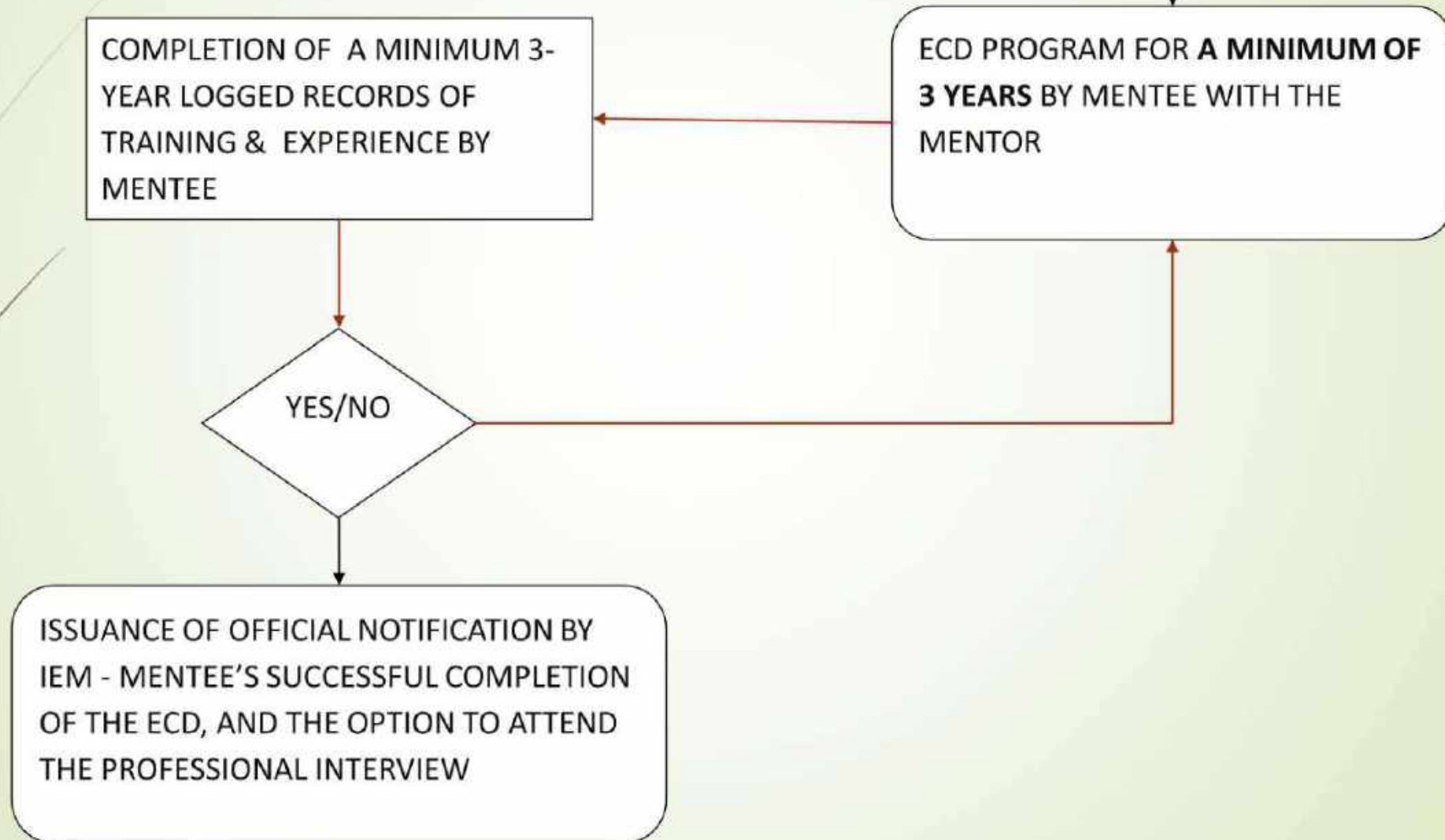| Additional Information	Posted on		
Senior IEM Mentors Info	25-Feb-2020	Download	Post Comment
List of Senior IEM Mentors Info	25-Feb-2020	Download	Post Comment
IEM ECD Guidelines Flyer	02-Dec-2019	Download	Post Comment
IEM Top Mentors Award 2019 Info	21-Nov-2019	Download	Post Comment
IEM ECD Program Registration Form	21-Nov-2019	Download	Post Comment
IEM ECD Mentor Registration Form	21-Nov-2019	Download	Post Comment
IEM ECD Mentorship Program Log File (.docx) Form	10-Jan-2019	Download	Post Comment
IEM ECD Mentorship Program Log Files (.pdf) Form	10-Jan-2019	Download	Post Comment
ECD PARTICIPANTS LIST_Mentee List	10-Sep-2019	Download	Post Comment
ECD PARTICIPANTS LIST_Mentor List	10-Sep-2019	Download	Post Comment

Why IEM brings to you ECD?

To assist **IEM Graduate Engineers** who are unable to obtain the **supervision** of a P.Eng. in their own organization.

To assist **IEM Graduate Engineers** obtain their **practical experience** under a formal training scheme supervised by a Corporate Member of the Institution before appearing for the Professional Interview.

ACTIVITY FLOW DIAGRAM OF IEM'S ECD

SELECTION PROCESS FOR PROSPECTIVE MENTOR(S) BY MENTEE

SELECTED

INITIAL ACQUAINTANCE MEETING AND BASELINE ASSESSMENT WITH THE PROSPECTIVE MENTOR

Not OK

OK

NO

ENDORSEMENT OF THE MENTORED TRAINING BY IEM

ENDORSED

Note:
Selection of Mentor is by Mentee but endorsement by IEM

ACTIVITY FLOW DIAGRAM OF IEM'S ECD

COMPLETION OF A MINIMUM 3-YEAR LOGGED RECORDS OF TRAINING & EXPERIENCE BY MENTEE

ECD PROGRAM FOR **A MINIMUM OF 3 YEARS** BY MENTEE WITH THE MENTOR

YES/NO

ISSUANCE OF OFFICIAL NOTIFICATION BY IEM - MENTEE'S SUCCESSFUL COMPLETION OF THE ECD, AND THE OPTION TO ATTEND THE PROFESSIONAL INTERVIEW

The Program
The Big Picture

The Logbook

ECD Program

The Sub-Committee

The Mentee

The Mentor

The Sub-Committee

The Sub-Committee

Discipline	Member
IEM Secretariat	Cik Farezah Junaidi Email: ecd@iem.org.my Tel: 03 – 7968 4001 / 2 Fax: 03 – 7957 7678
Petroleum	Ir. Abdul Razak bin Yakob
Chemical	Ir. Juares Rizal bin Abdul Hamid (Advisor)
	Ir. Assoc. Prof. Dr. Lee Tin Sin
Electrical/Electronics	Ir. Mohd. Azha bin Abu Samah (Chairman)
	Ir. Lim Kim Ten
Mechanical	Ir. Al-Khairi Mohd. Daud
	Prof. Madya Ir. Dr. Abdul Talib Din
Civil	Dato' Ir. Hj. Rozlan Ahmad Zainuddin
	Ir. Han Seng Kong

The Mentor

Criteria to be a IEM ECD Mentor

- Must be a Corporate Member of IEM (FIEM or MIEM) AND;

- Must be a Professional Engineer (PE) registered with the Board of Engineers, Malaysia (BEM) for at least three (3) years AND;

- Must attend the IEM Mentors Engagement session AND PI Workshop at least once AND;

- Must not have more than 3 Mentees at any time;

- Must be in the **same engineering discipline** with the Mentee

General Responsibilities of a Mentor

1. **Provide guidance to young graduates.**

2. **Monitor progress of young graduates.**

3. **Assist graduates in their training programmes.**

4. **Review documentation of graduates to ensure adequate quality.**

Roles & Responsibilities of Mentor

1. Meet with the Mentee, at least once in every THREE (3) months, to review and discuss issues relating to the Mentee's training for guidance and verification.

2. The Mentor should wherever possible visit the Mentee's workplace at least **once** during tenure of mentorship.

3. Where the Mentor is outside Mentee's organization, the Mentor is encouraged to communicate with the Mentee regularly by all available modes of communication.

Roles & Responsibilities of Mentor

4. Log Book is to be endorsed by the Mentor on a quarterly basis and the Mentor's PE stamp should be affixed, signed with date of endorsement.

   The Mentor should also provide his/her comments in Log Book.

5. The Mentor should inform Mentee of his/her weakness from time to time and not wait until the last minute to inform that whatever Mentee has done so far is incorrect.

Roles & Responsibilities of Mentor

6. The Mentor needs to review and make advisory comments on the Mentee's training and experience and check for adequacy of the Log Book report so that the Mentee can use it to prepare for the Professional Interview.

7. The Mentor should encourage his/her Mentee to obtain relevant experience based on his/her area of expertise for the purpose of Professional Interview.

Roles & Responsibilities of Mentor

8. Mentor should advise the Mentee that in addition to core engineering practices, he/she should also obtain experience in the following areas:

√ Economics and Finance

√ Quality Systems

√ Environmental Management

√ Marketing

√ Energy Efficiency

√ Malaysian Law and Legal Systems of other countries

Roles & Responsibilities of Mentor

9. Advise on other information and knowledge such as ethics, environment and safety, business, economics and communication.

10. Check that the minimum duration spent in activities for **design, field and management experience** is obtained during the ECD period meet the P.I, requirements.

Minimum Duration of Practical Experiences

Engineering Branch and Related Sub Branches	Design Experience (Month)	Site Experience (Month)
Civil Engineering	12	12
Mechanical Engineering	6	12
Electrical Engineering	12	6
Electronic Engineering	6	12
Chemical Engineering	6	6
Other Branches of Engineering	6	6

Roles & Responsibilities of Mentor

11. It is advisable for the Mentor to encourage and support the Mentee to sit for the Professional Interview after the completion of the ECD provided Mentee has gained all competencies required for PI application

12. Advise the requirements and the process needed for the Mentee to become a Professional Engineer with BEM and a Corporate Member of IEM.

13. Mentor should support the mentee on the PI interview application and registration with BEM by endorsing the mentee's application

Mentor's Role: At End of Year 3

PRACTICAL TRAINING & EXPERIENCE RECORDS SUMMARY

Annual Summary of Competencies Obtained

Category	Element	Brief Evidences	Mentor's Comments	Date
A Engineering Knowledge Application	A1			
	A2			
	A3			
B Problem Solving	B1			
	B2			
	B3			
C Management	C1			
	C2			
	C3			
	C4			
D Interpersonal Skill	D1			
	D2			
	D3			
E Professional Ethics	E1			
	E2			
	E3			
	E4			
	E5			

Mentor recommendations

Year 1/2/3 Recommendation
Support for PI
Require more exposure
Date

Section B under **Annual Summary of Competencies Obtained:**

Check whether Mentee meets all 18 Competencies Elements and tick either:

- Support for PI or
- Require more exposure

Mentor's Role: At End of Year 3

Training and Experience Report

Annexe : Design and Site Experience

Applicant is expected to have sufficient design and site experience typically expected of a competent engineer. The design and site experience is also the mandatory requirements for a person to register with the Board of Engineers, Malaysia as a Professional Engineer.

The length of design and site experience differs from one engineering branch / discipline to another. This applies to the sub-branches of each major engineering branch. The following table gives the summary.

Engineering Branch and Related Sub Branches	Design Experience (Month)	Site Experience (Month)
Civil Engineering	12	12
Mechanical Engineering	6	12
Electrical Engineering	12	6
Electronic Engineering	6	12
Chemical Engineering	6	6
Other Branches of Engineering	6	6
Academicians (Lecturing Candidate)	Cumulative of 12 months in design and/or site	

IEM PI A401

Check / discuss with Mentee whether he has fulfill required length of design and site experience for his discipline

IEM PI A401

Annexe A	Design Experience	
Date From / To	**Evidence of Design Experience** Transcribed from Competence Categories A and B	**Duration** (Month)
	Position : Nature of Job : Supervisor(P. Eng):	
	Position : Nature of Job : Supervisor(P. Eng):	
	Position : Nature of Job : Supervisor(P. Eng):	
	Cumulative Total (Month)	

Annexe B	Site Experience	
Date From / To	**Evidence of Design Experience** Transcribed from Competence Categories A and B	**Duration** (Month)
	Position : Nature of Job : Supervisor(P. Eng):	
	Position : Nature of Job : Supervisor(P. Eng):	
	Position : Nature of Job : Supervisor(P. Eng):	
	Cumulative Total (Month)	

The Mentee

Guidelines for Mentees

1. It is the Mentee who choose the Mentor.
   ✓ *So Mentor must be of the same or allied discipline and have relevant experience to give Mentee relevant guidance and advice.*

2. Mentee to check with his Employer on the type and level of information and confidentiality that can be shared with the Mentor when reporting his training and work experience.

Guidelines for Mentees

3. Plan and arrange the appointment with the Mentor on a regular basis, **at least once in every THREE (3) months**.

4. Meeting schedule and the mode of meeting shall be mutually agreed upon by both parties.

5. Prepare proper logged reports and documentation to be verified by the Mentor during the scheduled meeting.

Guidelines for Mentees

6. Log book must be sent to IEM **once a year** and **continuously** for minimum of **THREE (3) consecutive years** for verification by ECD Sub-Committee.

   Once verified & endorsed by IEM, the Log Book will be returned to the Mentee.

7. The Mentee is allowed to backdate his working experience in the log book for a maximum period of 1 year.

Guidelines for Mentees

8. The Mentor should preferably be the same person for the 3 consecutive years. IEM should be notified if there is a change of mentor.

9. In the event that the Mentee wishes to discontinue with the ECD he/she needs to inform both the Mentor & IEM of his/her decision in writing.

10. The Mentee should make the effort to get the training & experience necessary as required by Professional Interview Guidelines within the mentorship period.

Guidelines for Mentees

11. To apply for Professional Interview with IEM, the Mentee must ensure that he/she has minimum THREE (3) years relevant **work experience,** meeting minimum **requirements** of all **competencies** related to his/her discipline.

12. Upon passing the Professional Interview with IEM, a Mentee has only a maximum of **ONE (1)** year to apply to the Board of Engineers (BEM) to be a Professional Engineer (PE)

The Logbook

Log Book Details

1. The Log Book submitted by the Mentee should include the following:

   ✓ Brief description of jobs or tasks performed by the Mentee.

   ✓ Sketches or simple diagram may be used.

   ✓ Detail investigations, studies and calculations could be submitted as attachments to the Log Book.

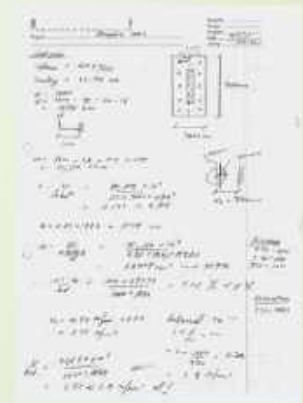Annual   Quarterly   Detailed   Attachments

Log Book Details
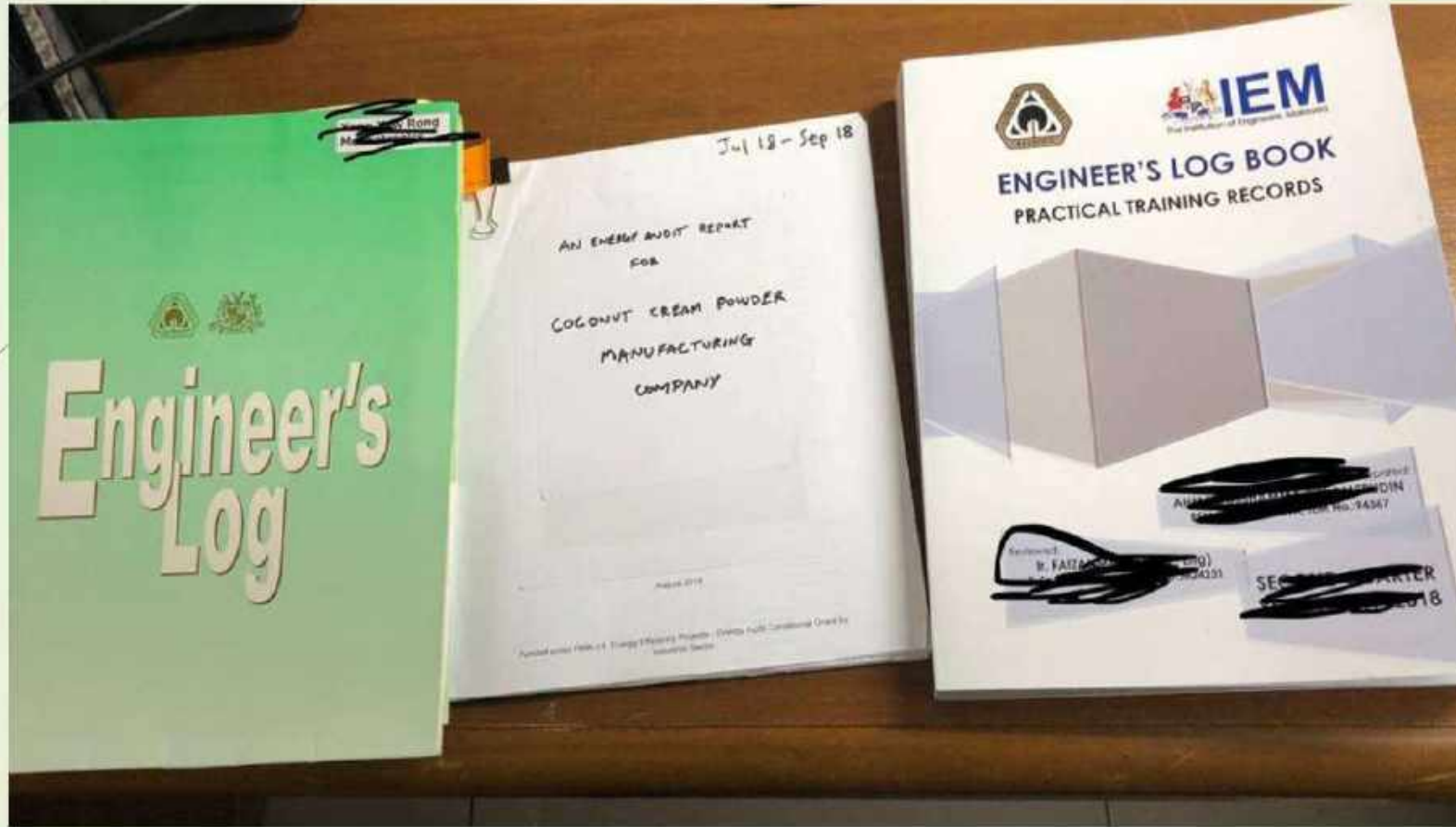
2. Record of activities should be in chronological order.

3. Seminars, talks or courses should be recorded in log book and provided with a summary on the topics learned.

4. Information must be relevant and show:

   - the Mentee's involvement
   - problems encountered
   - solutions proposed &
   - lessons learnt.

Log Book Submission

Annual Reports: Normal, Simple and Detailed

Common Mistakes

1. Submission not complying with Professional Interview Guidelines
   - ✓ All submission on site experience only, no design experience

2. Irrelevant engineering experiences such as
   - ✓ Mechanical graduate engineer submits civil engineering work experiences
   - ✓ Electronic / biomedical graduate engineer submit electrical engineering work experiences

3. Repeated engineering experiences submissions
4. Insufficient details – one page submission, picture report

Common Mistakes

5. Sub-discipline work experiences such as

   ✓ Electrical graduate engineer who wish to sit for electrical engineering discipline submits sub-discipline work experience such as electronic, telecommunications or biomedical (Will be permitted to sit for the relevant sub-discipline only)

6. Irrelevant details – MOM, etc. Log Book submission is not a record of construction progress but focused on experience and competencies gained

7. Submission of confidential document / information without employer's endorsement

Completing Logbook **DOES NOT** Guarantee Passing PI Interview

Logbook assessment purely based on submission and does not assess the candidate's competency on

- ✓ Oral communication skills
- ✓ Presentation skills
- ✓ Personal grasp & application of engineering fundamentals
- ✓ Maturity to understand his own limitations
- ✓ Adherence to professional code of ethics
- ✓ Capacity to accept professional responsibility

Section B
Summary of Practical
Training & Experience

PRACTICAL TRAINING & EXPERIENCE RECORDS SUMMARY

Annual Summary of Competencies Obtained

Category	Element	Brief Evidences	Mentor's Comments	Date
A Engineering Knowledge Application	A1			
	A2			
	A3			
B Problem Solving	B1			
	B2			
	B3			
C Management	C1			
	C2			
	C3			
	C4			
D Interpersonal Skill	D1			
	D2			
	D3			
E Professional Ethics	E1			
	E2			
	E3			
	E4			
	E5			

Mentor recommendations

Year 1/2/3 Recommendation
Support for PI
Require more exposure
Date

Quarterly Summary of Competencies Obtained

From - To (Month & Year)	Position Held / Name of Employer	Brief description of Duties (If all details to be documented in Section C)	Area of Experience Design, Site, Management, Training, Research	Competency Elements Gained

COMMENTS OF SUPERVISOR/MENTOR

COMPETENCY CATEGORY A (Detailed)

A	Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology.
A1	Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology and other relevant developments.
A2	Engage in the creative and innovative development of engineering technology and continuous improvement systems.
A3	Apply engineering knowledge related to local practices, codes, standards, specifications, materials, products, environmental plans and other requirements; and where appropriate, apply engineering knowledge contributed by others including suppliers, consultants, contractors, manufacturers, technologists, researchers and independent experts.

Evidence of your competence in Category A	Element	Date Obtained

Way Forward

Engineering Competency Development: Paving the Path for Future Professional Engineers

Author: Engineering Competency Development Committee
(formerly known as Log Book Training Scheme Sub-Committee)

I n 1982, IEM initiated the Log Book Training Scheme (LBTS) programme to assist Graduate Members obtain their professional engineer qualification. The objective was to support graduate members in organisations which did not have a professional engineer with the same engineering discipline to act as mentor or supervising professional engineer.

It is with this very core essence of its establishment and to support the change of professional engineer interview from outcome based to competency-based assessment that IEM has rebranded LBTS to Engineering Competency Development (ECD).

Since its inception, many graduate members have benefitted from this programme. IEM shall continue to provide this service to graduate members with enhancements (the objectives of this rebranding exercise) to cater to changes in the IEM Professional Interview assessment format, the younger generation and advancements in the industry.

In the rebranding exercise, we concentrate on five elements: Database, Survey, Name, Engagement and Appreciation.

Firstly, membership to the ECD programme is not automatic. Neither was the LBTS. However, as the years went by, the programme accumulated a very long list of mentors and mentees, whether they were active or not. The list became meaningless and using manual tracking made it too complex and time consuming to utilise or maintain.

To streamline this issue, database clean-up was required. An invitation email/letter was sent out in December 2017, to all mentors and mentees listed in the database. The objective was to update and confirm interest of each mentor and mentee to be maintained in the programme. Their replies were tabulated.
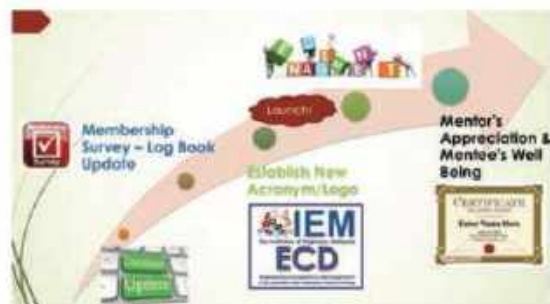
Elements of LBTS rebranding

Enrolling in the programme is voluntary since a graduate member can take other routes to become a professional engineer. We believe in concentrating our efforts and energy of our resources on graduate members who are serious about progressing in their professional careers. We volunteer because we believe in nurturing the engineering industry and this should be appreciated by the participants. The database cleanup exercise reduced the list of participants by more than half. The list of mentors and mentees will be listed in the ECD section for the reference of members.

Secondly, we conducted a survey of all the members in the old database with the objective to improve LBTS effectiveness for the candidates pursuing Professional Engineer Certification, to make

LBTS more effective for the mentor in helping their mentees and to collect information on areas of improvement that need to be considered during LBTS rebranding. The survey was conducted on the 'survey monkey' platform from 5 January to 5 February 2018. It was divided into 3 categories: Demographic Information, Engineer's Log and Overall Scheme.

The response was not encouraging but those concerned over the well-being of the LBTS programme, managed to voice out their opinions. One of the most important findings was that all respondents thought the programme was beneficial and relevant to their organisations and their career development. This was important to know because, if this programme was deemed irrelevant, it should be scrapped.

Another major finding was that LBTS needed to be made online and paperless. This was actually the approach the committee felt strongly about, moving forward. However, such interface would require a major information technology setup which would mean high financial investment. The committee agreed that the project should be conducted over a longer period of time in multi-stages to go along with the upgrading of IT infrastructure at IEM.

We shall update the progress in upcoming articles. Other findings relating to the improvement process are in the process of implementation or will be reviewed and implemented in the near future.

Thirdly, to be current with the industry and in-line with the changes in IEM, a new name was deemed necessary. The IEM PI assessment format was enhanced to competency based, with the last batch of PI applicant registered by 31 December 2017. So, a "competency" based assessment need to be supported with mentorship that focused on competency based as well. This was where LBTS needed to be enhanced. The competency was not about focusing on traits of engineers personally but rather their engineering capabilities. This programme may also be expanded to include potential members from backgrounds such as technicians and technologists, once the organisation has designed the career development path of these groups of members.

A new logo was introduced, together with the new name "Engineering Competency Development" (instead of "Log Book Training Scheme"), as part of the marketing impact for brand recognition.

The fourth element in this rebranding exercise is engagement. We believe that all programme participants need support from the IEM secretariat and committee members. With this in mind, we will being in more mentor and mentee support sessions to continue to brief and refresh participants about the programme, update new features (if any), and answer queries from members. The committee shall also start mentoring such sessions at the branch level and provide support as required. In 2017, the committee started the initiative of training trainers for branch representatives to conduct such briefings at their respective locations.

The "train the trainer" programme was implemented to reach out to more qualified mentors, especially to cater to the needs of branches outside the Klang Valley (HQ). This will make the programme more effective in serving mentees at their respective regions. In addition, the trainers can also organise mentor-mentee engagement sessions to support more graduate members requiring mentors to pursue the professional certification. The committee will continue to provide such support and seek cooperation from all to engage the secretariat in-charge and the committee for any assistance required.

The last element is recognition for mentee and mentor. For the mentees, we encourage giving feedback on their mentors, introducing a mentor recognition programme and social media engagement. We encourage feedback on the mentors, be it positive or requiring improvements. Feedback is important to monitor the suitability of a mentor and a mentee. This is a 3-year relationship during which both parties will need to connect with each other professionally. Should the match between a mentor and mentee not be achieved, then we should find alternatives. Mentor recognition is also another way for mentees to provide the best feedback on their mentors. We have heard many stories of the admiration mentees have for their mentors and we would like to make these stories known. Do not hide your

admiration but instead recognise the efforts of your mentor.

When social media engagement started a few years ago on Facebook, many graduate members preferred this method of reaching out for assistance. We shall streamline and promote more such social media presence.

As for mentors, we shall maintain the list of mentors on the website as part of an elite group of people who has reached a certain level of ability to be a mentor in the industry, appreciation letters and a mentor recognition programme. These are members who are able and willing to altruistically help others to be as successful as they are.

When a mentee becomes a corporate member, the mentor will receive an appreciation letter signed by the IEM President. We believe a mentee's success is also that of the mentor's. Another form of recognition for mentors is the annual 'Top 5 Mentors' Based on the feedback from mentees, these 5 mentors will be given recognition at an official IEM event.

For now, these are the elements of our rebranding effort. The Committee would like to thank all survey participants for providing ideas on how they would like to see the programme sail in the IBM organisation, how to make it relevant in the industry and how to engage with the participants.

We will provide updates, from time to time on the progress of the ECD programme. This is part of our engagement efforts for all members. We must remember that all the committee members and mentors in the programme are volunteers who are passionate about helping the younger generation achieve career development satisfaction with professional certification.

Contributing our personal time and sharing our knowledge and experiences are done in the hope that our contributions will translate into the development of Malaysia and being the country to greater heights. Therefore, instead of criticism, let us think of how the programme can be made better. We will certainly appreciate help in any way possible. Let us all work together. ∎

August 2018 Jurutera - 2-page article on ECD rebranding

Reward of Mentors

- Personal satisfaction that you are responsible for the professional development of your Mentee.

- **15 CPD points** per Mentee per year.

- Recognition Letter

- IEM's Next Top Mentor - Annual

Way Forward – Where you are heading to...

Mentee Register
- Assigned a Mentor

Quarterly Meeting
- Report reviewed by Mentor
- If practicable: Visit to mentee's workplace at least once during the mentorship

Annual Report Submission
- 3 years
- Reviewed by Sub-Committee every year

Professional Interview
- Technical Report
- Portfolio of Evidence

SAFETY
is about caring for each other

I CARE !

Thank you